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LES Exhibit 10

LOUISIANA ENERGY

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April 30, 1992

Charles J. Haughney, Chief
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Docket No.: 70-3070
Louisiana Energy Services
Claiborne Enrichment Center
Need Information
File: MTS-6046-00-2001.01

Dear Mr. Haughney:

Enclosed are responses to the requests for additional information concerning need for the facility. Attachment A outlines the information.

If there are any questions concerning this, please do not hesitate to call me at (704) 373-8466.

Sincerely,

Peter G. LeRoy

Peter G. LeRoy
Licensing Manager

PGL/N41.492

Enclosures

NUCLEAR REGULATORY COMMISSION

Docket No. 70-3070-ML Official Exh. No. LES 10
In the matter of Louisiana Energy Services
Staff ______ IDENTIFIED ✓
Applicant ✓ RECEIVED ✓
Intervenor ______ REJECTED ______
Cont'g Off'r ______
Contractor ______ DATE 3/15/95
Other ______ Witness ______
Reporter P. Broom

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Attachment A

NRC Request For Additional Information
Letter Dated November 7, 1992

Questions and Requests for Additional Information - Environmental

1.2 Need for the Facility

1. The discussion of need for the CEC should be expanded to cover, as a minimum, the following areas:

   a. Projection and analysis of the world's need for low enriched uranium and the production capacity of low enriched uranium among nations, including the next 30 years (for the life of the plant).

Enclosed is Table 1 providing Energy Resources International, Inc.'s mid range forecast of world enrichment services requirements through the year 2030. Also included is Table 2 providing the corresponding nuclear power growth projection for the world. The enclosed "Notes On Forecast of World Enrichment Services Requirements, Midrange Projection to the year 2030" provides an analysis of the world's need for low enriched uranium. Enclosed Table 3 identifies the worldwide enrichment capacity, existing and planned for the year 2000. No projections of enrichment capacity are currently available beyond the year 2000.

b. Justification of the need for a privately owned plant in the U. S. rather than relying on DOE and foreign suppliers.

c. Cost competitiveness of other suppliers, including DOE, should be discussed and analyzed.

The need for the CEC does not depend on whether the CEC is privately owned. Some nuclear power plants in the United States are owned by private utilities, while others are owned by federal agencies such as TVA or other publicly owned entities such as the Washington Public Power Supply System or the Omaha Public Power District. Similarly, the CEC can co-exist with the DOE, competing on the basis of economic or other factors important to the purchasers of enrichment services. Indeed, a number of attempts have been made in the Congress to privatize DOE, or at least form a government corporation to manage the enterprise. The arguments generally advanced in favor of such action are that it could be more competitive on the world market, could respond more effectively to changing market conditions, and could more easily be held accountable to safety and environmental regulation.

LES Market

The attached Graph 1 depicts LES' estimation of the United States uncommitted SWU market. LES' plans for the CEC call for a phased series of investment decisions for the plant's 1.5 MM SWU capacity. Each increment of installation is timed to meet a share of the uncommitted needs of the U.S. SWU market from 1996 through 2002.

One third of the plant's output has been reserved for the utility affliates of the founding general and limited partners: Duke Power, Northern States Power, and Louisiana Power and Light. Procurement of the centrifuges and associated equipment will take place as capacity is committed to meet increased delivery requirements.

The LES facility is expected to come into full production in the 1998-2002 time period. The timing of capacity coming on line is intended to match the forecast U.S. market, with uncommitted SWU of approximately 3 million during 1996-98, increasing to approximately 8.5 million at the turn of the century. LES' expected share of the U. S. market is forecast to be approximately 15% when in full production.

Market Background

Since the introduction of commercial nuclear power in the 1960's, the gaseous diffusion plants operated by the U.S. Department of Energy ("DOE") and its predecessors have been the sole domestic source of uranium enrichment services and have supplied the vast majority of U.S. utilities' enrichment needs. From an initial monopoly position, DOE retained its high market share while employing enrichment contracts that were non-negotiable and contained pricing provisions which permitted DOE to change its SWU price unilaterally at 180 days' notice. Competing sources of supply were not available until the 1980's.

The current DOE enrichment contract (the Utility Services Contract, or "USC") was introduced in 1984. The USC is a 10 year requirements based contract which required utilities to source 70% of their enrichment services with the DOE. About 90% of U.S. utilities entered into the USC. The balance chose to source their services from alternative suppliers, including European primary producers Eurodif and Urenco.

As a result of cancellations by utilities, DOE's market share has declined substantially, as shown on Graph 1. Only 10 utilities, representing less than 12% of the U.S. market, presently still have commitments in 2001 under DOE contracts amounting to 5% of the U. S. market[1]. Thus, as there are no other domestic producers, foreign suppliers and potential domestic market entrants have gained a significant opportunity in the U.S. market.

Need for CEC

The fundamental case for the CEC is that it can and will compete on economic grounds, allowing U.S. electric utilities a competitive source of supply so that they can in turn achieve the lowest cost reliable supply of electricity to their rate payers. This is achieved primarily because the centrifuge process uses only a small fraction of the electric power required by the competing diffusion plants. Also, its relatively benign environmental impact assures that this cost advantage will, if anything, grow in the future as environmental restrictions on enrichment plants and on the electric power sources which supply them come under increasingly severe restrictions.

A competitive domestic market will also act as a self-regulating mechanism to keep the DOE operations, whether managed by DOE or a successor corporation, operating as efficiently as possible. The

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[1] LES Market Survey.

successful introduction of a world-class technology to the United States will also provide a more complete perspective when future decisions to add or replace capacity must be made on a national basis.

Economic Cost Advantage

LES projects that its output will have a lower cost than that of the current U.S. capacity over the long run (e.g., the license period of the CEC) for the following reasons:

1. The cost of electricity generated by coal-burning power plants is expected to rise because of the impact of acid rain mitigation required by the Clean Air Act Amendments of 1990. Since the diffusion plants use approximately 50 times as much electric power per unit of output as the CEC, the impact will be proportionately much more severe on the SWU production costs at diffusion plants.[2] Potential carbon emission mitigation in the future could serve to accentuate this impact.

2. The impact of meeting current environmental regulations is fully accounted for in the CEC costs, as discussed below.[3]

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[2] S.1630, the "Clean Air Act Amendments of 1990", signed into law on November 1, 1990, is expected to have considerable impact on DOE power costs. DOE obtains about 80% of the power needed to operate its diffusion plants from two specific sources which use coal-fired stations. Electric Energy Incorporated supplies power from its Joppa station to Paducah. The Ohio Valley Electric Company serves Portsmouth from the Kyger Creek and Clifty Creek stations. These units have historically been high sulfur emitters, and bringing them into compliance should raise DOE's power costs by $10 to $20 per SWU by the year 2000 (United States Uranium Enrichment Enterprise--An Independent Assessment, May 1990, Smith Barney, Harris Upham and Company. Also reported in the **Nuclear Fuel** newsletter, October 29, 1990).

[3] GAO report GAO/RCED-92-77BR discusses the adequacy of several methods of funding the costs of D&D of buildings and equipment, site remedial actions, and depleted uranium disposition at the DOE sites. The D&D of buildings and equipment is taken to be $16.1B (with a range from +50% to -30%) from an Ebasco study provided to the DOE in September, 1991. Remedial action costs were assumed to be $3B from a September, 1991 Martin Marietta study. Disposal of the depleted uranium hexafluoride was taken to be $1.9B (range from 1.3 to 4.1). The conclusion of the GAO study was that

Environmental Impact

The Claiborne Enrichment Center will meet currently applicable environmental standards, its energy saving technology considerably reduces the demand for electricity, and it compares favorably with the diffusion process in areas important to safety and the protection of the environment. LES expects that a major fraction of its output will displace production from diffusion plants which when built were not required to meet current NRC and EPA standards and regulations.[4]

In addition, the fact that the centrifuge technology uses only 2% as much electric energy per unit of output means that the CEC will also reduce the demand for electric power to provide enrichment services. Assuming the CEC to be operating at its nominal capacity of 1.5 million SWU per annum and that this displaces production from a diffusion plant, this amounts to a reduction of approximately 3.4 billion kWh per year.[5] This is roughly the output of a 600MW electric power plant running at 65%

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an annual charge of $500 million dollars, escalated, was enough to cover these costs, if levied through at least 2030. Spread over DOE's current sales, this could amount to as much as $50 per SWU. The current Congress is considering various methods of funding, ranging from a charge assessed against all nuclear electric generation to required annual set-asides from enrichment revenues which would result in cost increases for DOE customers. The ultimate impact of such a decision on DOE's pricing is unknown at the present time, as the allocation of a portion of this cost to DOD, the user of most of the earlier output from DOE's plants, has not been decided. Also, the method of assessing foreign users of DOE's services is not known. Nonetheless, significant upward pressure on DOE's pricing is expected. Lower sales in the future, a prospect that DOE must consider, would result in higher D&D unit costs.

[4] "Cost Estimate for Nuclear Regulatory Commission Licensing of Uranium Enrichment Plants at Portsmouth, Ohio and Paducah, Kentucky", Office of Uranium Enrichment, Office of Nuclear Energy, U. S. Department of Energy, December 14, 1989.

[5] DOE's FY 1993 Uranium Enrichment Budget Submission indicates that 2,487 megawatt-years were required to produce 10.7 million SWU in FY 1991. This is equivalent to an average power requirement of 2,331 kwh per SWU. A 1.5 million SWU per annum centrifuge plant would eliminate 98% of this power requirement, 2,284 kwh per SWU, for a total savings of 3.43 billion kwh per year.

capacity factor. Using parameters appropriate to 1990[6], the CEC would have eliminated the annual burning of about 1.5 million tons of high sulfur coal. This equates to an emissions reduction of 100,000 tons of SO_2 and 1 million tons of carbon per annum.[7]

Accident source terms must also be considered in an environmental assessment. The centrifuge enrichment cascades operate at a pressure substantially below atmospheric pressure so that leaks are initially contained and plant controls will ensure that UF_6 in plant systems affected by a leak will be pumped off/withdrawn and the affected systems isolated by valve closure action for repair. Furthermore, an entire centrifuge cascade will have an in-process inventory no more than about ten kilograms of UF_6, whereas a single DOE GDP has 200,000 times this amount. For these two reasons, a centrifuge enrichment plant has an inherent advantage in terms of reduced UF_6 inventory and less opportunity for UF_6 releases in the very unlikely event of leaks.

Competition

Competition for the CEC will come from several sources: the DOE; foreign suppliers, especially European and Russian; and possibly recycled nuclear weapons material.

Although DOE has discussed bringing on line a plant using laser technology, which it proposes would be more competitive than the diffusion plants currently employed, no firm plans exist for the construction and operation of such a plant. It appears that such a plant cannot be brought on line before the year 2002, and that furthermore, if such were to happen even then, the CEC would continue to be competitive.[8]

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[6] "Annual Report - 1990", Ohio Valley Electric Corporation and subsidiary Indiana-Kentucky Electric Corporation.

[7] Data supplied on FERC form 423 by DOE electric suppliers Ohio Valley Electric Corporation and Indiana-Kentucky Electric Corporation indicate an average sulfur content of greater than 6 lbs. SO_2 per million BTU for 1990. The reference in footnote 5 indicates a heat rate of 9,881 BTU per kwh. The "Handbook of Chemistry and Physics, Twenty-Fifth Edition" indicates that for coals of the type used by DOE's power suppliers, 65% by weight is carbon.

[8] Until DOE demonstrates integrated systems reliability, decides on a deployment plan and it is approved by Congress, there is no basis for any comparison with the CEC. Assuming those steps were taken, LES' opinion is that no credible basis for estimating production costs and schedule could be prepared before the plant

With regard to foreign sources, LES believes it will continue to enjoy a price advantage over the diffusion technology employed by Cogema in France, primarily because of the latter's much higher consumption of electric power as discussed above in the case of DOE. Additionally, non-U. S. suppliers will be reluctant to commit on a European currency cost basis to supply substantial quantities over a long period of time under fixed contract terms in U.S. dollars.

Russia has the capacity to export to the United States, and is currently offering low prices on the world market. However, Russia is currently the target of anti-dumping trade action in the United States for offering prices below imputed cost. The resolution of this action is uncertain, as is the long term future of trade relations between the United States and Russia. Based on our current market evaluation, the CEC will be competitive in the U.S. market for its projected 15% share, even if the Russians also supply a substantial portion. Given the need for security of supply most U.S. utilities will be unwilling to predicate a major fraction of their supply on a foreign source if they have the opportunity to buy from a competitive, reliable, domestic source. Perceived instability in Russian supply security will also limit U.S. utility commitments.

Additional competition may appear in the form of recycled highly enriched material from nuclear weapons and stockpiles. However, there are currently no firm plans for utilization of such

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design is sufficiently advanced to allow submittal of a license application. This would require successful completion of the current pilot demonstration at Lawrence Livermore, and design of the necessary facilities to integrate an AVLIS plant into the nuclear fuel cycle (thus bridging the gap between use of a metal eutectic and the UF_6 to UO_2 step currently employed in nuclear fuel manufacture). LES estimates that start of construction of such a plant could be no earlier than six years from date of go-ahead for deployment, and that first production would be no earlier than ten years from now. In Congressional testimony (see Nuclear Fuel newsletter, September 30, 1991), DOE Assistant Secretary for Nuclear Energy William Young stated that "the earliest possible date for operating a commercial AVLIS facility is now 2001". This would be a true first-of-a-kind plant, and the SWU price reflecting adequate return on capital employed would in LES' opinion be higher than that from a known-technology centrifuge plant, i.e., the CEC. A report prepared by the Edison Electric Institute in 1991 ("The DOE AVLIS Program: An Assessment", Report No. NFC-91-001, Edison Electric Institute, March 1991) concludes that DOE's estimate of $37 per SWU is low by at least a factor of two. (See Nuclear Fuel newsletter, April 29, 1991.)

material. Substantial discussion among the leaders of the affected governments and industry regarding international political, military, safeguards issues and the disruption of world uranium markets would be required before such material was moved into the commercial sector. This is a process which could take years to formulate, approve and implement. Were such a program begun, however, it would most likely amount to a displacement of only a portion of LES' target market, and the competitive factors discussed above would continue to apply.[9]

[9] This topic was discussed at the recent USCEA Fuel Cycle conference in Charleston, SC on March 25, 1992. In the papers presented by Messrs. Loring Mills, Julian Steyn, and Frank von Hippel available quantities of the order of 800 metric tonnes of highly enriched uranium were posited. Blending this back to reactor grade material by admixture with natural uranium or tails would equate to about twenty percent of Western world enrichment demand over a twenty year period. LES believes that the most likely possibility would be that the nations involved would reserve some of this material for naval propulsion reactors, and release the rest, if at all, over a period of years in a manner so as not to disrupt commercial production. It has also been mentioned that such material might be used to replace more expensive DOE GDP capacity, resulting in no net gain of marketed production.

1.2. d. Explain why any delay in LES' plans to obtain a license and operate the CEC would be very costly.

Contractual commitments for enrichment services by US nuclear power plants (Graph 1), shows a window of opportunity starting in 1996, the scheduled startup date for the CEC. Utility purchasing practice, at least for the majority, has been to make commitments for several years at a time, rather than on an annual basis. Thus, LES fears that inability to provide enrichment services starting in 1996 could lead to loss of sales opportunity for several years after that time. A delay in the income flow increases the carrying cost on the plant investment before the return cash flow is received.

TABLE 1

WORLD ENRICHMENT SERVICES REQUIREMENTS
MID RANGE PROJECTION
(Millions of SWU)

YEAR	U.S.	WESTERN EUROPE	FAR EAST	CENTRAL EUROPE	OTHER	WORLD EXCLUDING U.S.S.R	U.S.S.R.	WORLD
1991	8.53	10.52	3.39	0.90	0.42	23.76	4.24	28.00
1992	8.81	10.76	4.18	0.94	0.55	25.24	4.41	29.65
1993	8.71	10.47	4.45	1.21	0.61	25.45	4.75	30.20
1994	8.76	10.13	4.45	1.31	0.80	24.45	5.29	30.74
1995	8.75	10.27	4.58	1.18	0.83	25.61	5.09	30.70
1996	8.59	10.20	4.58	1.09	0.67	25.13	5.08	30.21
1997	8.75	10.17	4.88	1.10	0.90	25.80	5.26	31.06
1998	8.75	10.31	5.07	1.25	0.90	26.27	5.29	31.56
1999	8.74	10.30	5.04	1.18	0.92	26.17	5.30	31.47
2000	8.91	10.69	5.21	1.14	0.93	26.87	5.50	32.37
2001	8.91	11.10	5.24	1.46	1.04	27.74	5.60	33.34
2002	8.91	11.12	5.48	1.46	1.20	28.16	5.69	33.85
2003	8.99	11.23	5.43	1.47	1.44	28.56	5.78	34.34
2004	8.92	11.54	5.61	1.47	1.36	28.90	5.87	34.77
2005	8.99	11.79	5.85	1.41	1.26	29.30	5.97	35.27
2006	9.10	12.01	5.83	1.41	1.26	29.61	6.06	35.67
2007	9.21	11.79	5.78	1.73	1.22	29.73	6.16	35.89
2008	9.33	12.49	6.12	2.04	1.38	31.36	6.25	37.61
2009	9.57	12.69	6.25	1.91	1.35	31.77	6.34	38.11
2010	9.81	12.66	6.23	1.76	1.26	31.72	6.43	38.15
2011	9.97	12.62	6.46	1.76	1.47	32.28	6.53	38.81
2012	10.13	12.56	6.71	1.92	1.47	32.79	6.62	39.41
2013	10.28	12.79	6.66	2.39	1.48	33.60	6.68	40.28
2014	10.44	13.06	6.78	2.31	1.64	34.23	6.77	41.00
2015	10.56	12.95	6.81	2.11	1.60	34.03	6.83	40.86
2016	10.68	12.80	6.98	2.27	1.52	34.25	6.90	41.15
2017	10.82	12.83	7.10	2.27	1.65	34.67	6.96	41.63
2018	10.96	13.12	6.99	2.34	1.65	35.06	6.98	42.04
2019	11.01	12.80	7.01	2.66	1.71	35.19	7.04	42.23
2020	11.08	12.68	7.37	2.75	1.87	35.75	7.06	42.81
2021	11.19	12.95	7.42	2.60	1.79	35.95	7.10	43.05
2022	11.30	12.93	7.31	2.51	1.70	35.75	7.13	42.88
2023	11.41	12.57	7.46	2.64	2.13	36.21	7.18	43.39
2024	11.74	12.43	7.54	2.78	2.27	36.76	7.08	43.84
2025	12.07	12.52	7.51	3.00	2.02	37.12	7.11	44.23
2026	12.24	12.41	7.56	2.88	2.09	37.18	7.07	44.25
202	12.33	11.86	7.62	2.72	2.36	36.89	7.08	43.97
2028	12.33	12.18	7.69	3.04	2.28	37.52	7.09	44.61
2029	12.39	12.22	7.88	3.01	2.25	37.75	7.15	44.90
2030	12.13	12.47	7.81	2.86	2.41	37.68	7.21	44.89

(a) Includes the effects of projected tails assays, nuclear plant capacity factors, and recycle savings.

(b) Does not include U.S. government requirements.

(c) Includes U.K. requirements for the recycling of depleted uranium arising from reprocessed Magnox fuel.

TABLE 2

NUCLEAR POWER GROWTH PROJECTION FOR THE WORLD
MID CASE
(Gigawatt Electric)

YEAR	U.S.	CANADA	WESTERN EUROPE	FAR EAST	CENTRAL EUROPE	OTHER	WORLD EXCLUDING U.S.S.R	U.S.S.R.	WORLD
1991	99.6	13.2	118.8	43.2	8.4	5.7	288.9	36.0	324.9
1992	100.8	14.1	120.1	43.2	8.8	5.9	292.9	37.8	330.7
1993	100.8	14.9	123.5	43.2	9.2	6.2	297.8	39.6	337.4
1994	100.9	14.9	126.0	47.9	9.6	7.1	306.4	41.5	347.9
1995	100.9	14.9	126.2	49.4	11.2	7.5	310.1	44.4	354.5
1996	102.0	14.9	127.4	52.3	12.5	9.3	318.4	47.6	366.0
1997	102.0	14.9	128.6	54.1	13.2	9.7	322.5	47.6	370.1
1998	102.0	14.9	130.9	56.0	13.2	10.8	327.8	48.7	376.5
1999	102.0	14.9	130.9	58.4	13.2	12.6	332.0	49.7	381.7
2000	102.0	14.9	132.3	60.4	13.9	12.6	336.1	50.6	386.7
2001	102.0	14.9	132.1	62.5	13.9	13.6	339.0	51.5	390.5
2202	102.0	15.4	134.7	63.5	13.9	13.6	343.1	52.5	395.6
2003	102.0	15.4	136.9	65.3	16.3	14.8	350.7	53.4	404.1
2004	101.5	15.4	137.0	67.3	16.3	16.1	353.6	54.4	408.0
2005	101.5	15.4	140.5	68.3	17.2	18.1	361.0	55.3	416.3
2006	101.5	16.3	142.7	70.3	17.8	18.1	366.7	56.3	423.0
2007	101.1	16.3	145.1	72.3	17.8	19.1	371.7	57.2	428.9
2008	101.6	17.1	147.3	73.3	17.8	19.6	376.7	58.2	434.9
2009	102.8	17.1	147.1	74.1	20.3	19.8	381.2	59.1	440.3
2010	104.0	18.0	152.3	76.9	22.2	20.8	394.2	60.1	454.3
2011	106.0	17.7	153.2	78.1	22.2	21.3	398.5	61.0	459.5
2012	108.0	18.4	155.2	79.3	22.8	21.2	404.9	62.0	466.9
2013	110.0	18.3	156.1	81.5	22.8	22.5	411.2	62.9	474.1
2014	112.0	19.2	157.4	83.2	23.8	22.9	418.5	63.5	482.0
2015	114.0	19.2	157.7	84.1	27.2	23.9	426.1	64.5	490.6
2016	116.0	20.0	160.2	85.7	27.2	24.9	434.0	65.2	499.2
2017	117.8	19.6	159.6	86.8	27.2	25.7	436.7	65.8	502.5
2018	119.6	20.2	160.4	87.7	28.8	25.7	442.4	66.5	508.9
2019	121.4	20.0	160.0	88.7	28.8	26.7	445.6	66.9	512.5
2020	123.0	20.9	161.1	90.0	29.7	27.2	451.9	67.6	519.5
2021	124.4	20.9	157.7	90.9	32.1	28.0	454.0	67.7	521.7
2022	125.8	21.8	159.4	93.6	33.0	29.0	462.6	68.1	530.7
2023	127.2	21.2	159.3	94.2	32.8	29.5	464.2	68.5	532.7
2024	128.6	21.7	156.9	94.5	33.3	28.8	463.8	69.1	532.9
2025	130.0	21.3	153.3	94.7	34.0	31.4	464.7	68.1	532.8
2026	132.6	21.8	153.1	96.4	34.6	32.3	470.8	68.5	539.3
2027	134.6	21.6	153.5	96.5	36.7	32.3	475.2	68.2	543.4
2028	135.9	22.5	151.1	98.4	36.4	33.1	477.4	68.3	545.7
2029	136.4	22.5	149.4	98.5	36.4	35.0	478.2	68.4	546.6
2030	137.0	22.4	150.7	100.2	38.7	34.8	483.8	69.1	552.9

TABLE 3

WORLDWIDE ENRICHMENT CAPACITY: EXISTING AND PLANNED (Millions of SWU/Year)

SUPPLIER	TECHNOLOGY	EXISTING 1990	PLANNED 2000	
DOE (U.S.)				
Paducah	Diffusion	11.3	11.3	
Portsmouth	Diffusion	7.9	7.9	
Subtotal DOE		19.2	19.2	
LES (U.S.)	Centrifuge	0.0	1.5	
Eurodif (France, Belgium, Spain, Italy)	Diffusion	10.8	10.8	
Urenco (U.K., Germany, Netherlands)	Centrifuge	2.7	5.0	(a)
Tenex (Soviet Union)	Centrifuge	10.0	10.0	
CNEIC (China)	Diffusion	0.5	0.5	
JNFI (Japan)	Centrifuge	0.2	1.5	(b)
UCOR (South Africa)	Helikon	0.3	0.3	
NUCLEI (Brazil)	Jet-Nozzle	0.0	0.3	
Total		43.7	49.1	

(a) Urenco's European sites are licensed for a total capacity of 5.0 million SWU. This additional capacity will be added as the market warrants. A capacity of 3.5 million SWU is more likely, particularly if the LES project is completed.

(b) An additional 1.5 million SWU may be added after the year 2000, dependent on market conditions.

NOTES ON FORECAST OF WORLD ENRICHMENT SERVICES REQUIREMENTS
MID-RANGE PROJECTION TO THE YEAR 2030

- Enrichment services projection is consistent with world mid-range growth projection in commercial nuclear generation capability as follows: 325 GWe in 1991; 387 GWe in 2000; 454 GWe in 2010; 520 GWe in 2020; 553 GWe in 2030. U.S. commercial nuclear generation capability in 2005 and beyond is assumed to be consistent with the lower reference case presented in the U.S. Energy Information Administration's Commercial Nuclear Power 1991, September 1991. This projection is consistent with the assumption that 70% of commercial reactors extend their original operating licenses an additional 20 years, for a total operating lifetime of 60 years.

- Reactor (U.S.) and country (non U.S.) specific capacity factors based on historical behavior are assumed. The resulting average world capacity factor is approximately 70%.

- Enrichment tails assays are assumed to decrease from 0.30 without U235 in 1991 to 0.28 without U235 in the year 2000 and after. The enrichment tails assay for the majority of Western Europe is assumed to be 0.25 without U235.

- Enrichment services reactor requirements are reduced due to the recycling of plutonium recovered from reprocessing by the following amounts: 1,100 MTU-SWU in 2000; 1,400 MTU-SWU in 2010; 1,700 MTU-SWU in 2020; 2,000 MTU-SWU in 2030.

- Enrichment services demand is increased by 150 to 250 MTU-SWU per year between 1991 and 2010 due to the recycling of depleted uranium arising from reprocessed Magnox fuel in the United Kingdom.

- This projection does not include any requirements of the U.S. government for enrichment services.

GRAPH 1
U.S. SWU MARKET
January 1992